

REMARKS

The present Amendment and Response is responsive to the non-final Office Action dated December 23, 2008. Claims 2-13 remain pending with claim 1 being amended. Claim 1 has been amended as described below in the section entitled “Objections to the Claims”, “Claim rejections under 35 U.S.C. §102”, “Claim rejections under 35 U.S.C. §103” and “Claim rejections under 35 U.S.C. §101”.

Claim Rejections under 35 U.S.C. §102

The Office Action rejected claim 1 under 35 U.S.C. Section 102(b) as being anticipated by Antoshenkov (US Patent No. 5,379,422).

The Applicants have amended claim 1 by adding the phrase “ordinal array structure” (*inferred from the 1st paragraph in Preferred Embodiment of the Present Invention and which is always considered to be the base for searching via dichotomizing algorithm by the person skilled in the art*) and “the deviation of one record is selected to be stored in dir_slot every certain number of records” (*see the 2nd paragraph in Summary of the Present Invention*) to emphasize the basis of the technical scheme of claim 1 and “searching the relative group of records of the data page in order according to the record deviation stored in the dir_slot” (*see the 2nd paragraph in Summary of the Present Invention and the 4th paragraph in Preferred Embodiment*). After amendment, Antoshenkov does not disclose or suggest each and every element of the applicants’ claimed invention, the Applicants respectively argue that claim 1 is patentably distinguishable from the cited reference and conforms to the provision of 35 U.S.C. Section 102(b).

First of all, Antoshenkov and claim 1 of present invention is applied to different data structures, which are the basis of their technical schemes. Claim 1 of the present invention defines the data structure as ordinal array (LINEAR) with the same depth. Relatively, Antoshenkov discloses the data structure as TREE with the different depths. Based on the different data structures, the operations in claim 1 of present invention and in Antoshenkov shall be distinguishable.

As per step 1 of present invention, the element of “setting an ordinal-array directory

structure composed of a group of record deviations at the end of a data page, in which, a record deviation is a position deviation of a certain record on the data page; each directory in the directory structure is called dir_slot, and each dir_slot stores the position deviation of one record; the deviation of one record is selected to be stored in dir_slot every certain number of records" is distinguished from Antoshenkov.

Substantially in the step 1 of present invention, a group of records in a directory structure possess the same logic depth, for their directory structure as ordinal array. The deviation of one record is stored in dir_slot every certain number of records for searching conveniently and skippingly. The dir_slot is used for fast switching the pointer nearer to the objective records. Each dir_slot, storing the position deviation of one record, and other records on the data page are also can be the objective record, namely certain of the dir_slot is at the same logic depth of some of records else on the data page.

On the contrary, Antoshenkov, particularly in column 9 of lines 19-36 and column 1 of lines 42-67, discloses a directory structure or root directory includes entries for pointers to groups of children directories (subdirectory) with files on a data page. The tree includes a main directory corresponding to the root of the tree, a subdirectory for each branch or intermediate node of the tree, and a file for each leaf of the tree. A file is accessed by searching a specified path in the tree, beginning with the root directory. And the same file name can be assigned to different files in different directories.

In substance, Antoshenkov teaches that the children directories, directory structure or root directory and files refer to different logic depth. Access to a file is based on prior access to the root directory and subdirectory. Each directory, such as root directory or subdirectory, in the tree structure corresponds to a pointer, and each file also corresponds to a pointer. The pointers to root directories or subdirectories merely lead the accurate paths to the pointers to files.

By comparison, ordinal-array directory structure in step 1 of present invention, composed of a group of record deviations selected every certain number of records with the same depth, is not regarded as tree directory structure in Antoshenkov, composed of a group of pointers of files and root directories and subdirectories with the different depths. Meanwhile, the dir_slot in step 1 of present invention, for fast switching the pointers nearer to the objective records and storing

the position deviation of one record, is not regarded as the root directory and/or subdirectory in Antoshenkov, functioning as path and directing to the pointers to the objective files accurately.

Therefore, the elements in the step 1 of the present invention are not disclosed by Antoshenkov.

As per step 2 of present invention, the element of “searching for relative records in the dir_slot by adopting a locating algorithm, after locating one certain dir_slot, searching the relative group of records of the data page in order according to the record deviation stored in the dir_slot and locating the record to be searched for accurately, and output the deviation of the record” is distinguished from Antoshenkov.

Substantially in the step 2 of present invention, two levels of locating operations are applying: first, a skipped locating process, which aim to rapidly switch to the relative one of all dir_slots by the ordinal-array directory structure established in step 1; and second, an precise locating process, which aim to locate the objective record according to the record deviation stored in the found dir_slot, being performing to search in order by the pointers in the linearity record chain of the data page. The pointer in the linearity record chain of the data page and the record deviation stored in the found dir_slot refer to be at the same logic depth. The deviation of one record is stored in dir_slot every certain number of records so that the suitable dir_slot can be located and the unsuitable dir_slot can be skipped. The accurate locating can be start from a nearer position on the data page.

On the contrary, Antoshenkov, particularly in lines 19-36 of column 9, lines 47-62 of column 5 and lines 62-63 of column 13, when searching a specified tree index, a file is accessed by searching a specified path, beginning with the root directory. If there are more keys in the path, the next key is obtained from the path and the directory entries are searched for a matching key.

In substance, Antoshenkov teaches that when searching process, it is accessed first to the root directory and then to the subdirectory or file by the tree index because the root directories, subdirectories and files refer to be at the different logic depth. If failing to find the pointer to the objective file, returning to the subdirectory and root directory and holding the current directory or re-searching beginning with the other subdirectories and root directories. Finally, an accurate

path, beginning with root directory, to the objective file is found.

By comparison, the searching process in same depth by the ordinal-array index in step 2 of present invention, by means of combination of the deviation of dir_slot in the directory structure, for accurate locating operation starting from a nearer position on the data page, and the pointer to records of the relative group in the linearity record chain of the data page, for accurately searching in sequence, is not regarded as the searching process in Antoshenkov for capture an accurate path from root directory to the objective file by the tree index, just according to the different depth.

Therefore, the elements in the step 2 of the present invention are not disclosed by Antoshenkov.

To conclude, since Antoshenkov does not disclose or suggest all elements of the applicant's claimed invention, applicants respectfully submit the rejection based on 35 U.S.C. Section 102(b) is overcome by amending the claim 1 to patentably distinguish over the prior art.

In addition, the technical solution defined by claim 1 of the present invention also conforms to 35 U.S.C. Section 103(a).

Listing the distinguishing features above as follows:

a)"ordinal-array directory structure in step 1 of present invention, composed of a group of record deviations selected every certain number of records with the same depth, is not regarded as tree directory structure in Antoshenkov, composed of a group of pointers of files and root directories and subdirectories with the different depths. Meanwhile, the dir_slot in step 1 of present invention, for fast switching the pointers nearer to the objective records and storing the position deviation of one record, is not regarded as the root directory and/or subdirectory in Antoshenkov, functioning as path and directing to the pointers to the objective files accurately";

b)"the searching process in same depth by the ordinal-array index in step 2 of present invention, by means of combination of the deviation of dir_slot in the directory structure, for fast skipped locating, and the pointer to records of the relative group in the linearity record chain of the data page, for accurately searching in sequence, is not regarded as the searching process in Antoshenkov for capture an accurate path from root directory to the objective file by the tree index, just according to the different depth".

The dir_slot of present invention, storing the position deviation of one record, substantially point to one record on the data page; furthermore deviation of one record is selected to be stored in dir_slot every certain number of records. Thus based on the ordinal array structure, the dir_slot of present invention aims to switch the pointer nearer to the objective record. Comparatively, the root directory and/or subdirectory in Antoshenkov substantially directing to a path due to tree directory structure. Thus based on the tree structure, the root directory and/or subdirectory aim to lead the path and partly isolate the files with same name.

Thus Antoshenkov fails to teach a technical solution to fast switch the pointers nearer to the objective record and then accurately locate the objective record. And the above distinguishing features are not attributed to the ordinary skill in the art to which said subject matter pertains.

Furthermore, Noven (US Pat. No. 5,884,297) and Schmuck (US Pat. No. 5,893,086) also fail to disclose and teach the distinguishing features listed above.

Therefore, the prior art do not teach the distinguishing features between the subject matter in claim 1 of the present invention and Antoshenkov (combining with Noven and/or Schmuck) such that the subject matter in claim 1 would have been non-obvious at the time the present invention was made to a person having ordinary skill in the art to which said subject matter pertains. There is no suggestion or motivation in the prior art to combine elements shown in Antoshenkov with the distinguishing features in order to form a scheme claimed in claim 1 of the present invention.

To conclude, applicants respectfully submit the amended claim 1 conforms to the provisions of 35 U.S.C. Section 103(a) as non-obviousness.

Claim Rejections under 35 U.S.C. §103

The Office Action rejected dependent claims 2-13 under 35 U.S.C. Section 103(a).

As stated above, independent claim 1 complies with the requirements of 35 U.S.C. Section 102(b) and 35 U.S.C. Section 103(a). Thus Applicants respectfully submit that dependent claims 2-13, directly and indirectly citing independent claim 1, are also in conformity with the provisions of 35 U.S.C. Section 103(a).

Claim Rejections under 35 U.S.C. §101

The Office Action rejected claim 1-13 under 35 U.S.C. Section 101 because the claimed invention is directed to non-statutory subject matter “software per se” which is merely a set instruction without any defined tangible output or tangible result being produced.

An application shall be patented with a useful, concrete, and tangible result within the meaning of 35 U.S.C. Section 101 defined in *State Street Bank & Trust Co. Signature Financial Group Inc.*, 149 F.3d 1368, 47USPQ2d 1596.

In light of favorable reconsideration of this application, Applicants have amended claim 1 of present invention to add the phrase “for reading or updating the record” at the end of the claim 1; which the amended part can be inferred from the technique scheme of the present invention: as we known, the fast locating records on a data page must aim to read or modify the records at least.

After amendment, the output of the deviation of the record for reading or updating the record, comprises a useful, concrete, and tangible result being produced. Since this deviation value is physical deviation address of this record on the data page, it can be used to directly read out the record without needing to search the physical deviation address of this record orderly from the first record on the corresponding data page. Therefore, the time for searching and comparing is greatly reduced and users can inquire and write or modify the records on the page efficiently.

To conclude, claims 1-13 are statutory with a useful, concrete, and tangible result under 35 U.S.C. Section 101.

Conclusion

The Applicants believe they have responded to each matter raised by the Examiner. Allowance of the claims is respectfully solicited. It is believed that the present patent application, after the above amendments and statement of opinions, has overcome all the defects pointed out by the Examiner and is in conformity with the relevant provisions of the patent law, so it should be granted patent rights. As such Applicants respectfully request an early notice of allowance for this application. If there is still a problem that the Examiner believes is not overcome by the above amendments and statement of opinions, Applicants respectfully request a further non-final

Application of: Shiliang Li et al
Serial No. 10/584,010
Date: June 21, 2006
Page - 11 -

action in which to offer further amendments and further clarification or explanation or observation as necessary.

If the Examiner finds that there are any outstanding issues that may be resolved by a telephone interview, she is invited to contact the undersigned at the below listed number.

Respectfully submitted,



Daniel M. Gurfinkel
Reg. No. 34,177

Dated: March 23, 2009
Husch Blackwell Sanders Welsh & Katz
120 South Riverside Plaza, 22nd Floor
Chicago, Illinois 60606
(312) 655-1500 Telephone;
(312) 655-1501 Facsimile